REMARKS

Claims 1 through 42 are pending herein. By the Office Action, Claims 6 and 13 are rejected under 35 U.S.C. 112, first paragraph; Claims 1-42 are rejected under 35 U.S.C. 102(e) as being anticipated by Black (U.S. Pat. No. 6,269,351). The Specification is objected to for entry of a copending application serial number. By this amendment, the specification is amended to include the filing date and application serial number of the referenced copending application. Additionally, Claims 1, 9, 21, 33, 34, and 42 are amended. No new matter is added. Applicants respectfully traverse the rejection.

Rejection of Claims under U.S.C. 112

In the Office Action, a concern was raised by the Examiner as to support in the specification for transforming the problem solution a priori to the applications module/output device. The process for transforming the problem before incorporation into the application module is described on page 21 of the specification at lines 20-25. Examples are given describing transformation from discrete to continuous and problems with redundant constraints to ones without redundant constraints. Because the problem transformation process is described in the specification, it is respectfully requested that the rejection of Claims 6 and 13 be withdrawn.

Rejection of Claims Under U.S.C. 102(e)

The amendments to Claims 1, 9, 21, 33, 34, and 42 are broadening amendments submitted to more fully claim that which is Applicants' invention, and is not intended to limit or narrow the scope of the claims or to effect the Doctrine of Equivalents as it might be applied to the claims, were they unamended.

Applicants believe that the claims as amended hereby patentably distinguish over the cited art because of the presence of a complexity module and its interaction with the solver module. The complexity module is a higher level supervising element that captures previous data on expected solver behavior as a function of problem parameters. Based on its knowledge of optimization behavior, it may alter the problem definition (perhaps by changing the number of constraints, etc.), change the optimization algorithm, or request additional system resources, such as processors, processing time, etc. The complexity module of the subject application may select among many possible solving models and various solving algorithms, whereas Black teaches

only a neural network as a solver model, with the solver algorithm being only a type of gradient descent (column 1, lines 6-14).

These distinctions between the subject application and Black may be illustrated with an example application. Suppose the application is taking sensor inputs measuring the temperature of a building, considering the desired temperature goals and power limitations, and produce instructions for heating and cooling units in the building that result in the desired temperatures while meeting various limitations imposed by the actual equipment. In the approach of Black, one would generate, for a large sample of input conditions (sensor readings), corresponding desirable outcomes (desired temperatures and resource consumption, e.g. power). Using the input/outcomes pairs, a neural network would be constructed and the weights would be randomly assigned. Learning or optimization of the weights occurs in order to make the neural network actual outputs be as close as possible to the desired outputs. In order to design appropriate output actions for each of many inputs, a very large number of training pairs would be needed. In Black, the weights would be adjusted until no improvement was noted whereupon perhaps a new starting point for the weights would be generated or new nodes would be added and a new optimization of the weights would occur. The weights and neural network structure that gives the minimum error between desired and actual outputs of the neural network would be selected to process the sensor inputs to generate instructions for the heating and cooling units of the building.

In the subject application, rather than using a single solver, complexity models are generated that link problem characteristics to various preferred solver configurations. Additionally, they predict the expected behavior when applying a solver configuration to a problem, which can be used to dynamically adapt the solver and to refine the complexity models if the solver's behavior diverges (specification, page 11, lines 19-23). Based on the complexity model, the desired error, and the computational constraints, the complexity model select an initial network architecture and implements a procedure to find an optimum. By comparing the expected rate of improvement to the predicted rate and the achieved rate of improvement, upon termination of the initial procedure, the complexity module would then modify the network architecture and either perform another solver iteration, go to a different model, such as constrained optimization, or change the optimization procedure. In addition, from the deviations between the expected rate of error improvement and those predicted by the complexity model,

the complexity module would be updated in order to better predict complexity in the future. Unlike the teaching of Black, the subject application might not start an optimization for a given network if the complexity module indicates that optimization would take too long or too much processing power. Instead it would transform the problem into a simpler one or request more time or initiate an error condition.

In view of the foregoing, it is submitted that the cited prior art fails to teach all of the features of the Applicants' invention. Because the cited art does not teach all of the features taught by the specification and amended claims of the subject application, Applicants believe that the subject application is patentably distinguished from the cited art. Therefore, it is respectfully requested that the rejection of Claims 1, 9, 21, 33, 34, and 42 be withdrawn.

Insofar as Claims 2-8, 10-20, 22-32, and 35-41, inclusive, are concerned, these claims all include the limitations of and depend from now presumably allowable amended Claims 1, 9, 21, 33, 34, and 42 respectively and are also believed to be in allowable condition for the reasons hereinbefore discussed with regard to Claims 1, 9, 21, 33, 34, and 42. Reconsideration and withdrawal of the rejection are respectfully requested.

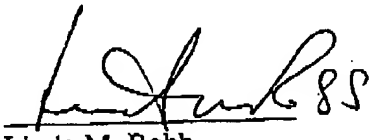
In view of the foregoing amendments and remarks, Applicants respectfully submit that the application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

Entry of the above amendments is respectfully requested.

No additional fee is believed to be required for this amendment. However, the undersigned Xerox Corporation Attorney hereby authorizes the charging of any necessary fees, other than the issue fee, to Xerox Corporation Deposit Account No. 24-0025.

In the event the Examiner considers personal contact advantageous to the disposition of this case, s/he is hereby authorized to call Applicants' Attorney, Linda M. Robb, at telephone number (310) 333-3683, El Segundo, California.

Respectfully submitted,



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